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FACTORS LIKELY TO IMPACT MASSACHUSETTS POPULATION TRENDS OVER THE NEXT TEN YEARS

Notes for a Presentation to the Revenue Advisory Board of the Executive Office for Administration and Finance, Commonwealth of Massachusetts

Alexander Ganz, Research Director
Boston Redevelopment Authority

November 10, 1983

Kevin H. White, Mayor
City of Boston

Robert J. Ryan, Director
Boston Redevelopment Authority

Alexander Ganz
Research Director

Boston Redevelopment Authority
Board of Directors
Robert L. Farrell, Chairman
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I. A Look at
"Selected Illustrative Recent Official Reports and Projections of Employment, Income, and Population for Massachusetts"

A. - November 1980 - U.S. Bureau of Economic Analysis Projections to the Year 2000
- Massachusetts as Second Lowest Growth State, 1978-2000

B. - The First Official Forecast Revision, May 1983
- New England Grew at More than National Average
- Metro Areas Grew Faster than Non-Metro
- Boston Metro Region Counties Grew Faster than New England, All Metro Counties, and U.S., 1979-81
- Job Growth for Boston Area Outpaces National Average

C. - September 1983 Results
- From 1979 to 1982, Massachusetts and Two Other Northeastern States (Connecticut and New Jersey) Were Among the Top Ten in Per Capita Personal Income Growth; New England Had the Largest Increase Among the Nation's Regions; Massachusetts Ranked Highest in New England and Fifth in the Nation.

Massachusetts Population Increased by 35,000 from 1979 to 1982.

D. - August 1983, A New Census Bureau Projection of State Population to 1990 and the Year 2000.
- Massachusetts Population is Projected to Decline
- "The Projections....Are Not Forecasts of Each State's Future Growth Patterns. They Present the Results of Continuing the Migration Patterns....Estimated for the 1970-80 Decade."

II. What Can We Make of the Contrast Between Projections and Reality, and How Do They Relate to Each Other?

A. - A Look at the Fluctuation of Unemployment Rates, 1960-83, Sheds Some Light
- Nation and Boston Metro Area
- New England, Massachusetts, and the Boston Metro Area

B. - The Forecasts Had Projected A Continuation of the 1969-78 Worse-than-National Impact of the Early and mid-'70s Recessions on the Boston and New England Economies

III. - The Post-1979 Reality (Faster Income Growth and Lower Unemployment Rates) Reflected the Fundamental Structural Transformation of the Boston, Metro Area, Massachusetts and New England Economy
- Services Revolution
- Communications, Information, Knowledge Industry
- Hi-Tech Industry

IV. - Basic Construct
- Structural Transformation and Employment Growth as Fundamental Factors (After Fertility and Mortality Patterns) in Determining Population Trends

A. - The 1970-75-81 United States and Massachusetts Experience with Respect to Structural Transformation and Employment Growth

1. 1970-75 as a Recession Period in U.S. and in Massachusetts with Loss in Manufacturing Jobs.

   For Massachusetts a Continuation of Manufacturing Job Loss (Older, Obsolescent Industry), More than Offsetting Growth in Finance and Services

   For Massachusetts with 29 Percent of Its Jobs in Manufacturing, (28 percent in U.S.) Impact was Severe

2. But, Those Familiar with the Services Revolution, Dating to the '60s and Earlier, and the Massachusetts Specialization in a Broad Range of Services Activities, Including Services Exports, Knew That It Would Engender a Fundamental Transformation of the Massachusetts Economy.

3. Views of Dan Garnick on BEA Projections in 1980

4. (A.G. Writings Since Late 1960s)

5. 1975-81 - A Time of Growth in Finance, Services and Hi-Tech Industry Favorably Impact (Boston) Massachusetts (New England) and the U.S.

6. But the Impact is Greater in Massachusetts
   - 1975-81 Finance and Services Growth Increment in Employment Makes Up One-Half of the Total Gain, and That in Durable Manufactures Accounts for Almost One-Fourth
   - And the Mass. Content is Different
     - Professional and Business Services
     - Higher Education and Medicine
     - Hi-Tech Industry

B. - The 1980s' Outlook for Mass. Employment Growth is Outstanding, as the City, Metro Area, State and Regional Economy Become Increasingly Attuned to Those Sectors of the National Economy Expected to Expand Most Rapidly
- U.S. Bureau of Labor Statistics Projections
- Mass. Division of Employment Security Projections
- BRA Projections

C. - This Prospect Signifies
- Employment Growth (though Less than U.S.)
- Lesser Vulnerability to Recession
- Expanding Opportunity and Influx of Young Adults Attracted to New Jobs; Modest Net Population Growth

D. - Other Factors Favoring Employment Growth in Massachusetts
- Favorable Recent Growth in Capacity Utilization
- Greater Recent Growth in Construction Activity
- Greater Recent Growth in Capital Expenditures
- Post-1974 Narrowing of Energy Cost Disadvantage
- More Efficient Energy Use

V. - For the City of Boston, the Economy and Population Equation Point to Extraordinary Transformation, Vigorous Employment Growth, and A Modest Rise in Population

A. - A Thriving Economy
- Employment 1976-82-92
- Private Development Investment 1979-83-86 and Beyond
- Upgrading of the Housing Stock
- Impoverished Public Investment

B. - Population 1970-80
- Loss of Blue Collar Workers and Their Families (White Population)
- Influx of Middle-Class Young Adults, Largely Professional
- Increase in Minority Population
- Advance in Educational Attainment Level of Adults
- Improvement in the Occupational Skills of the Labor Force

C. - Population Forecast
- Annual Rates of Growth in Percent

	1980-90	1990-2000
- U.S.	0.96	0.71
- Massachusetts	0.75	0.47
- Boston	0.21	0.17

(See Boston, Present and Future; Background Information for Infrastructure Planning, Table 29.)

D. - Addendum
- Example of Faulty Forecast Methodology
  - Metropolitan Area Planning Council
    - Population Forecast Made First and Then Used as a Constraint of Employment Projection
    - Use of Outdated Information

Bibliography

U.S. Department of Commerce, Bureau of Economic Analysis, Survey of Current Business, November 1980, Regional Economic Analysis Division, "Regional and State Projections of Income, Employment, and Population to the Year 2000."

Ibid., Survey of Current Business, May 1983, Kenneth Johnson, Howard Friedenberg and George Downey, "Tracking the BEA Regional and State Economic Projections;" Daniel H. Garnick, "Shifting Patterns in the Growth of Metropolitan Nonmetropolitan Areas."

Ibid., BEA Press Release 83-47, "1982 State Per Capita Personal Income," September 6, 1983; memorandum of Alexander Ganz "New Information on Favorable Economic Trends in New England and Massachusetts, 1979-82," September 2, 1983.

U.S. Department of Labor, Bureau of Labor Statistics, Press Release USDL 138, "1979-81 Job Growth for Boston Outpaces National Average; Job Growth Ranks 16th Among Nation's 33 Largest Employment Centers," September 1983.

U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Population Estimates and Projections, Series P-25, No. 937, Provisional Projections of the Population of States, By Age and Sex; 1980 to 2000.

Boston Redevelopment Authority, Jeffrey Brown and Yasuko Soeno, Cyclical Changes in the Boston Economy; Comparative Trends in the Metropolitan Area, the State, New England and the Nation, 1960-1982, July 1983.

Ibid., The Communications, Information, Knowledge Industries, and the Potential for Boston, August 1982.

Ibid., Boston, Present and Future; Background Information for Infrastructure Planning, June 1983.

Ibid., John Avault, "BRA Computer Study of Developments Shows Extraordinary Insights," Boston Globe, June 5, 1983.

Ibid., Boston's Prospective Development and the Linkage to Housing Needs, October 1983.

Ibid., City of Boston Population Projections; A Summary, February 1982.

Ibid., Alexander Ganz and Gregory Perkins, A Critique of Employment Projections of the Metropolitan Area Planning Council...., March 1983.

Ibid., Jeffrey Brown, Profile of Boston, 1929-1980, October 1982.

Ibid., "Research Department Publications."

SELECTED ILLUSTRATIVE RECENT OFFICIAL REPORTS AND PROJECTIONS OF EMPLOYMENT, INCOME, AND POPULATION FOR MASSACHUSETTS

Part 1

U.S. Department of Commerce, Bureau of Economic Analysis, Survey of Current Business, November 1980, "Regional and State Projections of Income, Employment, and Population to the Year 2000".

Massachusetts	Average Annual Growth Rate In Percent		Rank (Highest Number Is Lowest Rank)	
	1969-78	1978-2000	1969-78	1978-2000
Per Capita Income*	1.8	2.4	48	41
Personal Income*	2.0	2.6	47	48
Earned Income*	1.4	2.6	48	48
Employment	0.9	0.5	46	48
Population	0.2	0.2	44	47

* Dollars of Constant Value.

Ibid, Survey of Current Business, May 1983.

"Tracking the BEA Regional and State Economic Projections".

"....It is found that although much of the difference between actual and projected earnings in most regions and states can be attributed to the lagging national economy, a substantial part of the difference in come regions and states can be attributed to unanticipated departures from projected trends. ...New England, which was projected to grow at a rate somewhat less* than the national average, grew at a rate that was somewhat more than the national average."

* (In the case of per capita income, New England was projected 8th lowest in growth out of nine regions and 13 percent below the national average.)

Difference between actual and projected population, 1981.

1981 Actual	1981 Projected	Difference
	(Thousands of Persons)	
5,773.4	5,767.6	5.8

"Shifting Patterns in the Growth of Metropolitan and Nonmetropolitan Areas," Daniel H. Garnick.

"In 1979-81, for earnings as well as personal income, the metro rate of growth was greater than the nonmetro. Further, this pattern was pervasive across all major industry groups. ....Population growth in metro areas overall in the Mideast turned positive....as did population in the largest size class in New England.*"

* (Boston Metro Region Counties).

"The shift in income growth in favor of metro areas may portend a subsequent shift in relative population growth also, but the relationship between population and earnings trends is too loose in the short term to predict such a shift."

Average Annual Rates of Growth in Personal Income, Earned Income and Population
(Percent)

	1969-79			1979-81		
	Personal Income	Earnings	Population	Personal Income	Earnings	Population
United States	10.3	9.3	1.1	11.3	8.8	1.0
Nonmetro Counties	11.0	10.0	1.4	10.0	6.7	0.9
Metro Counties	9.8	9.2	1.0	11.5	9.3	1.1
New England	8.8	8.2	0.5	11.8	10.0	0.4
Boston Metro Area Counties	8.3	8.0	-0.4	12.2	10.9	0.3

Part 3

Memorandum, September 2, 1983, Alexander Ganz, Boston Redevelopment Authority

New Information on Favorable Economic Trends in New England and Massachusetts, 1979-82

A newly received report on state per capita personal income, from the U.S. Bureau of Economic Analysis, scheduled for release on September 6th, indicates that New England and Massachusetts excelled in economic trends in the 1979-82 period.

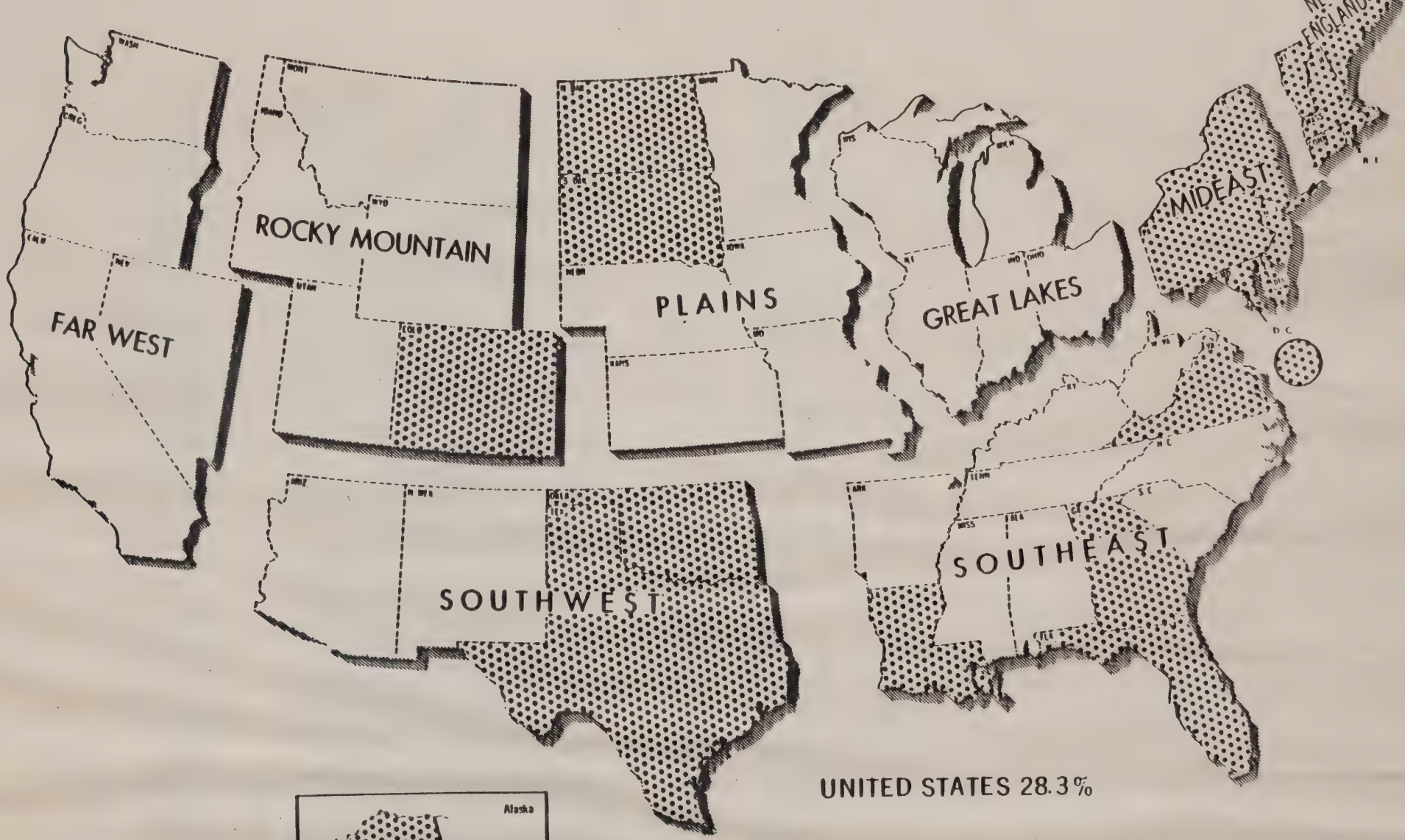
The report (see attachment) notes that, though real per capita personal income increased only moderately, over the 1979-82 years, Massachusetts and two other Northeastern states (Connecticut and New Jersey) were among the top ten in per capita personal income growth, that New England had the largest increase among the nation's regions, and that Massachusetts ranked highest in New England and fifth in the nation. The report also presents estimates showing an increase in the population of Massachusetts since 1980.

	1979	1980	1981	1982	Percent Change 1979-82
		(Thousands)			
Massachusetts Population	5,746	5,473	5,774	5,781	0.6

U.S. Dept. of Commerce, "1982 State Per Capita Personal Income," Press Release BEA 83-47, Sept. 6, 1983.

"....New England....

"From 1979 to 1982, per capita personal income in New England increased 33.7 percent, 5.4 percentage points more than nationally and the largest increase among the eight BEA regions. The increase in total personal income was well above the national average; earnings increases were large in both durables and nondurables manufacturing, construction, and private service-type industries. The increase in population was well below a 3.1 percent increase in the nation. All New England states had increases in per capita income that were more than the national average. Increases ranged from 34.8 percent in Massachusetts (ranking 5th among all states) to 29.8 percent in Rhode Island (ranking 18th)."



UNITED STATES 28.3%

Average or above average 28.3-43.3%

Below average 17.8-28.2%

U.S. Department of Commerce, Bureau of Economic Analysis

Part 4

U.S. Bureau of the Census, Current Population Reports, Population Estimates and Projections, Series P-25, No. 937, Provisional Projections of the Population of States, by Age and Sex: 1980 to 2000, August 1983.

"Introduction

....These projections represent the first series of State population projections released by the Census Bureau that are based on the 1980 census results and that are consistent with the middle series of national population projections published as Current Population Reports, Series P-25, No. 922. This set of projections is provisional in that it was developed with a cohort-component projections model employing residual measures of migration. The projections presented here are not forecasts of each State's future growth patterns. They present the results of continuing the migration patterns by age and sex estimated for the 1970-80 decade. When the full migration data are tabulated from the 1980 census question on residence 5 years ago, we will prepare a revised set of State population projections using more refined measures of migration."

"Projections of the Resident Population of Regions, Divisions, and States: 1980 to 2000

State	Population			Percent Change			
	Census, April 1, 1980	Projections		Census[1] Change, 1970-80	April 1, 1970, to April 1, 1980[2]	Projections	
		1990	2000			1980-90	1990-2000
Massachusetts	5,737,000	5,703,900	5,490,400	0.84	0.74	-0.77	-3.74 "

STRUCTURAL TRANSFORMATION AND EMPLOYMENT GROWTH,
IN THE UNITED STATES AND MASSACHUSETTS,
1970-75-81

	1970	1975	1981	Change 1970-75	Change 1975-81	1970	1975	1981	Change 1975-81
	(Number, in Thousands)					(Percent Distribution)			(In Percent)
United States									
Total	70,880	76,945	91,105	6,065	14,160	100	100	100	18
Mining & Construction	4,211	4,277	5,308	66	1,031	6	6	6	24
Durable Mfrs.	11,208	10,688	12,117	-520	(1,429)	16	14	(13)	(13)
Nondurable Mfrs.	8,158	7,635	8,056	-523	421	12	10	9	6
Transportation & Public Utilities	4,515	4,542	5,157	27	615	6	6	6	14
Trade	15,040	17,060	20,551	2,020	(3,491)	21	22	23	20
Finance	3,645	4,165	5,301	520	1,136	5	5	6	27
Services	11,548	13,892	18,592	2,344	(4,700)	16	18	(20)	(34)
Government	12,554	14,686	16,024	2,132	1,338	18	19	18	9
Massachusetts									
Total	2,243	2,273	2,654	30	381	100	100	100	17
Construction	94	77	78	-17	1	4	3	3	1
Durable Mfrs.	327	319	410	-8	(91)	15	14	(15)	(29)
Nondurable Mfrs.	312	258	266	-54	8	14	11	10	3
Transportation & Public Utilities	118	114	120	-4	6	5	5	5	5
Trade	488	511	575	23	(64)	22	22	22	13
Finance	130	135	164	5	29	6	6	6	21
Services	471	494	664	23	(170)	21	22	(25)	(34)
Government	302	364	386	62	22	13	16	15	6

Source: U.S. Department of Labor, Bureau of Labor Statistics.

BOSTON'S PROJECTED EMPLOYMENT IN THE 1980s: SERVICES, INFORMATION, AND HIGH-TECHNOLOGY INDUSTRIES LEAD A RESURGENCE OF JOB OPPORTUNITIES

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January 28, 1983

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City of Boston

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Boston's employment growth in the 1980s will be led by a broad range of services, information and high-technology industries. The City's net gain of more than eighty thousand jobs from 1980 to 1990 would exceed the growth rate in Massachusetts and nearly keep pace with national employment growth (see Tables 1 and 8).

These projections are based on published national and state projections and historical trends in the Boston economy. Employment growth in the 1980s will reflect a continued national shift from goods-producing to services-producing activities. Services and trade will account for more than one-half of job growth nationally (see Table 2). In Massachusetts, trade and services will supply two-thirds of the net new jobs and manufacturing of durable goods (mainly high-technology industries) will contribute another twenty percent of the growth (see Table 3).

Boston will rely on finance, transportation and communication, trade and a range of services related to information, high-technology manufacturing, health, education, business and social organizations (see Tables 4 and 5). In fact, ten of the top fifteen growth industries for the 1980s are in services and finance (see Table 6). Conversely, the declining industries are led by government, proprietors, and several of the older, nondurable goods manufacturing industries (see Table 7).

The projection method is explained in footnotes to Tables 1-5.

Table 1

1980-1990 EMPLOYMENT PROJECTIONS

	1980	1990	Net Change 1980-90	Percent Change 1980-90
United States	106,199,000	130,665,000	+24,466,000	+23.0%
Massachusetts (MDES)	2,649,350	2,966,450	+ 317,100	+12.0%
(BRA)		(3,136,830)	+ 487,480	+18.4%
Boston	548,497	631,517	+ 83,020	+15.1%

Note: Table includes BRA estimate of Massachusetts employment projection set at about 50 percent greater than MDES projection or 80 percent of U.S. rate. Boston rates are 80 percent of State rates and 65 percent of U.S. rate.

Source: Compiled by BRA Research Department.
See Tables 2, 3, and 4.

Table 2

UNITED STATES EMPLOYMENT BY MAJOR INDUSTRIAL SECTOR
1980 AND PROJECTED 1990
(In Millions)

Industry	Employment 1980	Employment 1990	Net Change 1980-90	Percent Change 1980-90
Total Employment	106,199	130,665	+24,466	+23.0%
Agriculture, Forestry, Fisheries	3,333	3,306	- 27	- 0.8
Mining	722	1,059	+ 337	+46.7
Construction	6,029	7,509	+ 1,480	+24.5
Manufacturing	21,759	25,520	+ 3,761	+17.3
Durables	13,249	16,045	+ 2,796	+21.1
Non-Durables	8,510	9,475	+ 965	+11.3
Transportation, Communications, Public Utilities	5,637	6,815	+ 1,178	+20.9
Trade	22,921	29,231	+ 6,310	+27.5
Wholesale	5,622	6,964	+ 1,342	+23.9
Retail	17,299	22,267	+ 4,968	+28.7
Finance, Insurance, Real Estate	5,677	7,464	+ 1,787	+31.5
Services & Proprietors	21,989	29,744	+ 7,755	+35.2
Business & Personal	8,907	12,000	+ 3,093	+34.7
Professional	13,082	17,735	+ 4,653	+35.6
Government	18,132	20,017	+ 1,885	+10.4

Source: U.S. Department of Labor, Bureau of Labor Statistics, "The Outlook for Industry Output and Employment through 1990", Monthly Labor Review, August 1981, pp. 28-41.

Table 3

MASSACHUSETTS WAGE AND SALARY EMPLOYMENT IN MAJOR INDUSTRY GROUP,* 1980 AND PROJECTED 1990

Industry	Employment 1980	Employment 1990	Net Change 1980-90	Percent Change 1980-90
Total, Wage and Salary	2,649,350	2,966,450	317,100	12.0
Agriculture, Forestry & Fishing	14,450	14,750	300	2.1
Mining	1,000	1,000	0	0
Construction	77,500	94,850	17,350	22.4
Manufacturing	677,250	742,800	65,500	9.7
Durable Goods	439,900	510,700	70,800	16.1
Non-Durable Goods	237,350	232,100	-5,250	- 2.2
Transportation, Communica. & Public Utilities	142,400	139,550	-2,850	- 2.0
Wholesale and Retail Trade	573,400	652,050	78,650	13.7
Wholesale Trade	131,250	147,550	16,300	12.4
Retail Trade	442,150	504,500	62,350	14.1
Finance, Insurance, Real Est.	158,600	185,000	26,400	16.6
Services & Proprietors	803,400	943,650	140,250	17.5
Business & Personal	198,800	222,050	23,250	11.7
Professional	604,600	721,600	117,000	19.4
Government**	201,300	192,800	-8,500	- 4.2

* Employment numbers rounded. Percentages calculated on rounded totals.

** Public education and public hospitals allocated to services. U.S. Postal Services allocated to transportation.

Source: Massachusetts Division of Employment Security, "Massachusetts Employment: Projected Changes 1980-1990," October, 1982.

Table 4

CITY OF BOSTON EMPLOYMENT PROJECTIONS BY MAJOR INDUSTRIAL GROUP
1980 AND PROJECTED 1990

Industry	Employment 1980	Employment 1990	Net Change 1980-90	Percent Change 1980-90
Total	548,497	631,517	+83,020	+15.1%
Agriculture, Forestry, Fishing	518	528	+ 10	+ 2.1
Mining	45	45	0	0
Construction	10,163	12,446	+ 2,238	+22.5
Manufacturing	51,861	56,529	+ 4,668	+ 9.0
Durables	20,615	25,130	+ 4,515	+21.9
Non-Durables	31,246	31,399	+ 325	.5
Transportation, Communications, Public Utilities	36,660	40,569	+ 3,909	+10.6
Trade	83,027	95,121	+12,094	+14.6
Wholesale	27,308	30,611	+ 3,303	+12.1
Retail	55,719	64,510	+ 8,791	+15.8
Finance, Insurance, Real Est.	70,451	85,028	+14,577	+20.7
Services	187,991	239,267	+51,276	+27.3
Business and Personal	54,994	73,713	+18,719	+34.0
Professional	132,997	165,554	+32,557	+24.5
Proprietors	11,764	10,000	- 1,764	-15.0
Government	96,017	91,984	- 4,033	- 4.2%

Source: See Table 5.

Table 5

I. CITY OF BOSTON EMPLOYMENT PROJECTIONS,
BY DETAILED (2-DIGIT SIC) INDUSTRIES, 1980-1990
(Number of Workers)

SIC Code	Industry	Boston 1980 Actual	Boston 1990 Projected	Job Change 1980-1990 Number	Percent
Total		548,497	631,517	+83,020	+15.1
Agri., Forest, Fisheries		518	528	+ 10	+ 2.1
01	Agriculture-Crops	81	83	+ 2	+ 1.9
02	Agriculture-Livestock	0	0	0	0
07	Agricultural Services	394	401	+ 7	+ 2.7
08	Forestry	0	0	0	0
09	Fisheries	43	44	+ 1	+ 2.7
Mining		45	45	0	0
Construction		10,163	12,446	+2,283	+22.5
15	General Building	2,748	3,331	+ 583	+21.2
16	General Contracting	1,165	1,421	+ 256	+22.0
17	Special Contracting	6,250	7,694	+1,444	+23.1
Manufacturing		51,861	56,529	+4,668	+ 9.0
Durable Goods		20,615	25,130	+4,515	+21.9
24	Lumber & Wood	243	266	+ 23	+ 9.6
25	Furniture & Fixtures	885	838	- 47	- 5.5
32	Stone, Clay, & Glass	342	341	- 1	- 0.4
33	Primary Metals	766	806	+ 40	+ 5.2
34	Fabricated Metals	6,970	8,489	+1,519	+21.8
35	Non-Electric Machinery	4,221	5,808	+1,587	+19.6
36	Electrical Equipment	2,296	2,859	+ 563	+21.2
37	Transportation Equipment	960	1,036	+ 76	+ 7.9
38	Instruments	2,364	3,146	+ 782	+33.1
39	Miscellaneous Mfg.	1,568	1,541	- 27	- 1.7
Non-Durable Goods		31,246	31,399	+ 325	+ .5
20	Food Products	5,635	5,489	- 146	- 2.6
21	Tobacco Products	0	0	0	0
22	Textile Products	629	579	- 50	- 8.0
23	Apparel & Accessories	7,636	7,407	- 229	- 3.0
26	Paper & Pulp	1,121	1,083	- 38	- 3.4
17	Printing & Publishing	11,384	11,623	+ 239	+ 2.1
28	Chemical & Related Goods	2,202	2,550	+ 348	+15.8
29	Petroleum & Coal	248	255	+ 7	+ 2.7
30	Rubber & Plastics	1,143	1,403	+ 260	+22.7
31	Leather Products	1,248	1,010	- 238	-19.1

SIC Code	Industry	Boston 1980 Actual	Boston 1990 Projected	Job Change 1980-1990 Number	Job Change 1980-1990 Percent
	Transportation/Communications/ Utilities	36,660	40,569	+3,909	+10.6
40	Railroad Transportation	0	0	0	0
41	Local Passenger Transp.	1,924	1,787	- 137	- 7.1
42	Trucking & Warehousing	3,902	3,836	- 66	- 1.7
44	Water Transportation	1,220	1,220	0	0
45	Air Transportation	8,963	8,246	- 717	- 8.0
46	Pipeline Transportation	0	0	0	0
47	Transportation, Services	1,917	2,561	+ 644	+33.6
48	Communication	13,961	17,926	+3,965	+28.4
49	Electric, Gas, & Sanitary	4,773	4,993	+ 220	+ 4.6
	Trade	83,027	95,121	+12,094	+14.6
	Wholesale Trade	27,308	30,611	+ 3,303	+12.1
50	Durable Goods	13,636	15,927	+ 2,291	+16.8
51	Non-Durable Goods	13,672	14,684	+ 1,012	+ 7.4
	Retail Trade	55,719	64,510	+ 8,791	+15.8
52	Building Materials	826	871	+ 45	+ 5.5
53	General Merchandise	8,089	8,501	+ 412	+ 5.1
54	Food Stores	7,543	7,988	+ 445	+ 5.9
55	Automotive & Service	2,727	2,752	+ 25	+ .9
56	Apparel & Accessory	5,116	5,546	+ 430	+ 8.4
57	Furniture & Fixtures	1,784	1,910	+ 126	+ 7.1
58	Eating & Drinking	21,203	27,373	+ 6,170	+29.1
59	Miscellaneous Retail	8,431	9,569	+ 1,138	+13.5
	Finance, Insurance, Real Estate	70,451	85,028	+14,577	+20.7
60	Banking	17,443	20,391	+ 2,948	+16.9
61	Credit Institutions	2,186	3,157	+ 971	+44.4
62	Security Brokers	7,782	11,237	+ 3,455	+44.4
63	Insurance Carriers	28,576	31,576	+ 3,000	+10.5
64	Insurance Services	4,977	5,818	+ 841	+16.9
65	Real Estate	8,105	11,039	+ 2,934	+36.2
66	Other Ins. & Real Estate	209	268	+ 59	+28.2
67	Holding & Investment Cos.	1,173	1,542	+ 369	+31.5
	Services	187,991	239,267	+51,276	+27.3
	Business & Personal	54,994	73,713	+18,719	+34.0
70	Hotel & Lodging	5,974	8,053	+ 2,079	+34.8
72	Personal Services	4,127	4,185	+ 58	+ 1.4
73	Business & Advertising	35,205	50,977	+15,772	+44.8
75	Auto Repair & Services	4,371	4,891	+ 520	+11.9
76	Miscellaneous Repair	1,047	1,188	+ 141	+13.5
78	Motion Pictures	1,451	1,541	+ 90	+ 6.2
79	Amusement & Recreation	2,819	2,878	+ 59	+ 2.1

SIC Code	Industry	Boston 1980 Actual	Boston 1990 Projected	Job Change 1980-1990 Number	Percent
Services (continued)					
Professional		132,997	165,554	+32,557	+24.5
80	Health & Hospitals	59,776	76,812	+17,036	+28.5
81	Legal Services	8,362	11,473	+ 3,111	+37.2
82	Educational Services	24,112	23,750	- 362	- 1.5
83	Social Services	12,648	17,366	+ 4,718	+37.3
84	Museums & Gardens	1,407	1,749	+ 342	+24.3
86	Membership Organizations	5,617	5,645	+ 28	+ 0.5
88	Private Household Workers	437	444	+ 7	+ 1.5
89	Miscellaneous Professional Engin./Arch./Research/ Auditing	20,638	28,315	+ 7,677	+37.2
Proprietors (Self-Employed)		11,764	10,000	- 1,764	-15.0
Government (Fed., State, Local)		96,017	91,984	- 4,033	- 4.2

Source and Methodology:

Compiled by BRA Research Department using projections of U.S. industry employment growth 1980-1990 from Valerie Personick, "The Outlook for Industry Output and Employment through 1990", Monthly Labor Review, August 1981 pp. 28-41, and Massachusetts projections of industry employment prepared by the Massachusetts Division of Employment Security, "Massachusetts Employment: Projected Changes 1980 to 1990", October 1982. Boston projections were made at the detailed (2-digit SIC) industry level, taking the lower of the growth rates from the national and state projections (usually Massachusetts rates) except for a selection of about 20 (2-digit SIC) industries which give reasonable evidence of being fast-growth industries for Boston over the 1980-1990 time period. Thus, the Boston projection series is a "high growth scenario", and compares with an alternative moderate growth scenario of 60,000 net new jobs, for the period.

Table 6

BOSTON'S TOP FIFTEEN GROWTH INDUSTRIES FOR THE 1980s

Jobs			Percent		
1.	Health & Hospitals	17,036	1.	Business & Advertising	44.8%
2.	Business & Advertising	15,772	2.	Credit Institutions	44.4
3.	Misc. Prof. Services	7,677	3.	Security Brokers	44.4
4.	Eating & Drinking Estab.	6,170	4.	Misc. Prof. Services	37.2
5.	Social Services	4,718	5.	Legal Services	37.2
6.	Communications	3,965	6.	Social Services	37.2
7.	Security Brokers	3,455	7.	Real Estate	36.2
8.	Legal Services	3,111	8.	Hotel & Lodging	34.8
9.	Insurance Carriers	3,000	9.	Transportation Serv.	33.6
10.	Banking	2,948	10.	Instruments	33.1
11.	Real Estate	2,934	11.	Holding & Investment	31.5
12.	Wholesale Trade-Durables	2,291	12.	Eating & Drinking Est.	29.1
13.	Hotel & Lodging	2,079	13.	Health & Hospitals	28.5
14.	Non-Electric Machinery	1,587	14.	Communications	28.4
15.	Fabricated Metals	1,519	15.	Other Insurance/Real Estate	28.2%

Source: Compiled by BRA Research Department. See Table 5.

Table 7

BOSTON'S TOP FIFTEEN DECLINING INDUSTRIES IN THE 1980s

Jobs			Percent	
15.	Government	-4,033	15. Leather Products	-19.1%
14.	Proprietors	-1,764	14. Proprietors	-15.0
13.	Air Transportation	- 717	13. Textile Products	- 8.0
12.	Educational Services	- 362	12. Air Transportation	- 8.0
11.	Leather Products	- 238	11. Local Passenger Trans.	- 7.1
10.	Apparel Products	- 229	10. Furniture & Fixtures	- 5.5
9.	Food Products	- 146	9. Government	- 4.2
8.	Local Passenger Trans.	- 137	8. Paper & Pulp	- 3.4
7.	Trucking/Warehousing	- 66	7. Apparel Products	- 3.0
6.	Textile Products	- 50	6. Food Products	- 2.6
5.	Furniture & Fixtures	- 47	5. Misc. Manufacturing	- 1.7
4.	Paper & Pulp	- 38	4. Trucking/Warehousing	- 1.7
3.	Misc. Manufacturing	- 27	3. Educational Services	- 1.5
2.	Stone, Clay, Glass	- 1	2. Stone, Clay, Glass	- 0.4
1.	Mining	0	1. Mining	0.0%

Source: Compiled by BRA Research Department. See Table 5.

Table 8

II. EMPLOYMENT RATES OF CHANGE FOR DETAILED INDUSTRIES, 1980-1990
COMPARISON OF UNITED STATES, MASSACHUSETTS, AND BOSTON
(Change in Percent)

SIC Code	Industry	United States	Massachusetts	Boston
Total		+23.0%	+12.0%	+15.1%
Agriculture, Forestry, Fisheries		- 0.8	+ 2.1	+ 2.1
01	Agriculture-Crops	- 2.4	+ 2.1	+ 2.1
02	Agriculture-Livestock	-12.1	+ 1.9	0.0
07	Agricultural Services	+25.9	+ 2.7	+ 2.7
08	Forestry	+25.9	+ 2.7	0.0
09	Fisheries	+25.9	+ 2.7	+ 2.7
Mining		+46.7	0.0	0.0
10	Metals	+13.6	0.0	0.0
11	Hard Coal	+72.7	0.0	0.0
12	Soft Coal	+72.7	0.0	0.0
13	Oil & Gas	+50.4	0.0	0.0
14	Other Minerals	+ 9.2	0.0	0.0
Construction		+24.5	+22.4	+22.5
15	General Building	+24.5	+21.2	+21.2
16	General Contracting	+24.5	+22.0	+22.0
17	Special Contracting	+24.5	+23.1	+23.1
Manufacturing		+17.3	+ 9.7	+ 9.0
Durable Goods		+21.1	+16.1	+21.9
24	Lumber & Wood	- 6.1	+ 9.6	+ 9.6
25	Furniture & Fixtures	+20.5	- 5.5	- 5.5
32	Stone, Clay, & Glass	+10.5	- 0.4	- 0.4
33	Primary Metals	+ 8.8	+ 5.2	+ 5.2
34	Fabricated Metals	+21.8	+ 5.1	+21.8
35	Non-Electrical Machinery	+37.6	+37.6	+19.6
36	Electrical Equipment	+24.5	+24.5	+21.2
37	Transportation Equipment	+13.1	+ 7.9	+ 7.9
28	Instruments	+31.5	+33.1	+33.1
39	Miscellaneous Manufacturing	+10.1	- 1.7	- 1.7
Non-Durable Goods		+11.3	- 2.2	+ .5
20	Food Products	0.0	- 2.6	- 2.6
21	Tobacco Products	- 4.3	0.0	0.0
22	Textile Products	+ 4.5	- 8.0	- 8.0
23	Apparel & Accessories	+15.6	- 3.0	- 3.0
26	Paper & Pulp	+ 9.2	- 3.4	- 3.4
27	Printing & Publishing	+20.0	+ 2.1	+ 2.1
28	Chemicals & Related Goods	+15.8	+ 5.0	+15.8
29	Petroleum & Coal	- 3.8	+ 2.7	+ 2.7
30	Rubber & Plastics	+22.7	+ 6.0	+22.7
31	Leather Products	- 4.7	-19.1	-19.1

SIC Code	Industry	United States	Massachusetts	Boston
	Transportation, Communications, Public Utilities	+20.9	- 2.0	+10.6
40	Railroad Transportation	0.0	-10.9	0.0
41	Local Passenger Transportation	- 7.1	+18.4	- 7.1
42	Trucking & Warehousing	- 1.7	+29.2	- 1.7
44	Water Transportation	0.0	- 7.7	0.0
45	Air Transportation	- 8.0	+17.2	-8.0
46	Pipeline Transportation	0.0	+ 8.8	0.0
47	Transportation Services	+12.7	+33.6	+33.6
48	Communication	- 2.9	+28.4	+28.4
49	Electric, Gas, & Sanitary	+ 4.6	+23.1	+ 4.6
	Trade	+27.5	+13.7	+14.6
	Wholesale Trade	+23.9	+12.4	+12.1
50	Durable Goods	+23.9	+16.8	+16.8
51	Non-Durable Goods	+23.9	+ 7.4	+ 7.4
	Retail Trade	+28.7	+14.1	+15.8
52	Building Materials	+24.1	+ 5.5	+ 5.5
53	General Merchandise	+24.1	+ 5.1	+ 5.1
54	Food Stores	+24.1	+ 5.1	+ 5.9
55	Automotive & Service	+24.1	+ 0.9	+ .9
56	Apparel & Accessory	+24.1	+ 8.4	+ 8.4
57	Furniture & Fixtures	+24.1	+ 8.4	+ 7.1
58	Eating & Drinking	+42.3	+29.1	+29.1
59	Miscellaneous Retail	+24.1	+13.5	+13.5
	Finance/Insurance/Real Estate	+31.5	+16.6	+20.7
60	Banking	+32.1	+16.9	+16.9
61	Credit Institutions	+44.4	+12.6	+44.4
62	Security Brokers	+44.4	+25.6	+44.4
63	Insurance Carriers	+23.0	+10.5	+10.5
64	Insurance Services	+23.0	+16.9	+16.9
65	Real Estate	+36.2	+27.9	+36.2
66	Other Insurance & Real Estate	+28.2	+ 9.1	+28.2
67	Holding & Investment Companies	+44.4	+31.5	+31.5
	Services	+39.7	+17.5	+27.3
	Business and Personal	+34.7	+11.7	+34.0
70	Hotel & Lodging	+34.8	+19.8	+34.8
71	Personal Services	+20.7	+ 1.4	+ 1.4
73	Business & Advertising	+44.8	+37.2	+44.8
75	Auto Repair & Services	+39.9	+11.9	+11.9
76	Miscellaneous Repair	+20.7	+13.5	+13.5
78	Motion Pictures	+ 6.2	0.0	+6.2
79	Amusement and Recreation	+34.0	+ 2.1	+ 2.1

Services (continued)			
Professional	+35.6	+19.4	+24.5
80 Health & Hospitals	+56.5	+28.5	+28.5
81 Legal Services	+37.2	+27.8	+37.2
82 Educational Services	+25.5	- 1.5	- 1.5
83 Social Services	+24.3	+37.3	+37.3
84 Museums & Gardens	+24.3	+18.5	+24.3
86 Membership Organizations	+24.3	+ 0.5	+ 0.5
88 Private Household Workers	- 6.8	+ 1.5	+ 1.5
89 Miscellaneous Professional Engin./Arch./Research/ Auditing	+37.2	+28.2	+37.2
Proprietors (Self-employed)	-15.0	-15.0	-15.0
Government (Federal, State, & Local)	+10.4	- 4.2	- 4.2

Source: United States: From U.S. Department of Labor, Bureau of Labor Statistics, "The Outlook for Industry Output and Employment through 1990,"Monthly Labor Review. August 1981, pp. 28-41.

Massachusetts: Massachusetts Division of Employment Security, "Massachusetts Employment: Projected Changes 1980 to 1990," October 1982.

Boston: See Table 5 and Appendix of Sources and Methodology.